

We Claim:

1. A barrier array for use in a flat panel display comprising:

a shadow mask defining a plurality of openings therethrough according to a predetermined pattern, the predetermined pattern being in accordance with a pixel pattern of a flat panel display; and

an insulative layer formed thereon.
2. The barrier array as described in claim 1, wherein the shadow mask is made from a material selected from the group: invar, low carbon steel, or another suitable metal alloy, and the material has a coefficient of thermal expansion matching that of a substrate of a flat panel display.
3. The barrier array as described in claim 1, wherein the insulative layer comprises alumina or magnesia.
4. The barrier array as described in claim 3, wherein a thickness of the insulative layer is in the range from 10 to 500 micrometers.
5. The barrier array as described in claim 3, wherein a thickness of the insulative layer is in the range from 75 to 200 micrometers.
6. A method for making a barrier array for use in flat panel displays, comprising the following steps:

providing a metal plate;

forming a shadow mask from the metal plate by forming a plurality of openings through according to a predetermined pattern, the predetermined pattern being in accordance with a pixel pattern of a flat panel display; and

forming an insulative layer on the shadow mask.

7. The method for making a barrier array as described in claim 6, wherein the method further comprises a step of providing a mask having a pattern according to the pixel pattern of the flat panel display.
8. The method for making a barrier array as described in claim 6, wherein the metal plate is selected from the group: invar, low carbon steel, or other suitable metal alloys, and the metal plate has a thermal expansion coefficient matching that of a substrate of the flat panel display.
9. The method for making a barrier array as described in claim 6, wherein the insulative layer comprises alumina or magnesia and has a thickness in the range from 10 to 500 micrometers.
10. The method for making a barrier array as described in claim 6, wherein the insulative layer is formed on the shadow mask by spray coating.
11. The method for making a barrier array as described in claim 6, wherein the insulative layer is formed on the shadow mask by electrophoretic deposition.
12. The method for making a barrier array as described in claim 11, wherein an electrolyte employed by the electrophoretic deposition method comprises aluminum ions.
13. The method for making a barrier array as described in claim 12, wherein the electrolyte preferably comprises methyl alcohol, magnesium sulfate, aluminum nitrate, alumina and deionized water.
14. The method for making a barrier array as described in claim 11, wherein the shadow mask is used as an anode and aluminum is used as a cathode.
15. The method for making a barrier array as described in claim 6, wherein, after the insulative layer is formed on the shadow mask, preferably the shadow mask with the insulative layer formed thereon is soaked in a solution for several minutes.

16. The method for making a barrier array as described in claim 15, wherein the solution comprises ethyl cellulose, butyl alcohol, and xylene.
17. The method for making a barrier array as described in claim 15, wherein, after soaking, the shadow mask with the insulative layer formed thereon is cured.
18. A barrier array for use in a flat panel display comprising:
 - a metal plate defining a plurality of openings therethrough according to a pixel pattern of a flat panel display; and
 - an insulative layer formed thereon.
19. The barrier array as described in claim 18, wherein said openings are radially surrounded by said insulative layer.